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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

William J. Begley, et al

WHITE ORGANIC LIGHT-EMITTING DEVICES WITH IMPROVED PERFORMANCE

Serial No. US 10/801,997

Filed 16 March 2004

Group Art Unit: 1794

Examiner: Dawn L. Garrett

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Sir:

DECLARATION UNDER RULE 132

The undersigned, Tukaram. K. Hatwar, of Monroe County, Sate of New York, declares that:

He has received the degree of B.S. Majoring in Physics, Chemistry and Mathematics (1975) and a M.S. in Physics (1977) from Nagpur University, Nagpur, India

Ph.D. in Physics from Indian Institute of Technology, Bombay, India (1981);

Post Doctoral Research at Texas A & M at Commerce TX (1983-85);

He has been employed as a research scientist with Eastman Kodak Company since March 1985 and worked in OLED research since 1997;

He is an inventor in the above-captioned patent application;

He has reviewed the outstanding Office Action and any applicable cited references;

Under his direction and control, the following experiments were conducted In order to demonstrate that this invention is effective with more than one type of blue dopant, EL devices 1-3 were constructed in the following manner (all % are % vol):

A glass substrate coated with an 85 nm layer of indium-tin oxide (ITO) as the anode was sequentially ultrasonicated in a commercial detergent, rinsed in deionized water and exposed to oxygen plasma for about 1 min.

a) Over the ITO was deposited a 1 nm fluorocarbon (CFx) hole-injecting layer (HIL) by plasma-assisted deposition of CHF_3.

b) A hole-transporting layer (HTL) of *N,N'*-di-1-naphthalenyl-*N,N'*-diphenyl-4, 4'-diaminobiphenyl (NPB) having a thickness of 260 nm was then evaporated onto a).

c) A yellow light-emitting layer (YLEL) of *N,N'*-di-1-naphthalenyl-*N,N'*-diphenyl-4, 4'-diaminobiphenyl (NPB) having a thickness of 20 nm and yellow emitting dopant material as noted in Table 1 were then deposited onto hole-transporting layer b).

d) A 45 nm blue light-emitting layer (BLEL) of H-1, 7% NPB and blue emitting dopant material as noted in Table1 were then deposited onto the hole-transporting layer.

e) A 10 nm electron-transporting layer (ETL) of tris(8-quinolinolato)aluminum (III) (AlQ_3) was then deposited onto d).

f) On top of the ETL-AlQ_3 layer was deposited a 220 nm cathode formed of a 10:1 volume ratio of Mg and Ag.

The above sequence completed the deposition of the EL device. The device was then hermetically packaged in a dry glove box for protection against ambient environment. Lifetime is the number of hours required for the luminance to decrease by 50% of the original value at 80 mA/cm^2. Results are shown in Table 1.

Table 1: B-6 (Boron Complex) vs TBP as Blue Dopant

Example	Yellow Dopant (step c)	Blue Dopant (step d)	Voltage	Efficiency (cd/A)	Lifetime
1 (Comp)	5% Rubrene	1% B-6	9.21	8.58	226
2 (Inv)	3.5% Inv-2	1% B-6	9.66	10.92	299
3 (Inv)	3.5% Inv-2	1% TBP	8.99	12.53	350

Improvements in OLED efficiency and stability using the inventive derivatives are retained or improved with TBP as the blue dopant compared to B-6, a bis(azinyl)amine boron complex blue dopant. These data are consistent with the data in Tables 4 and 5 in the specification.

The undersigned declares further that all statements made herein of the undersigned's own knowledge are true and all statements made on information and belief are believed to be true. These statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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Tukaram. K. Hatwar

Date:_____